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ABSTRACT

A study was conducted to explore why students in Ohio enter three selected taxonomy areas of vocational agriculture and to describe their attributes and vocational objectives. From a sample of 180 11th- and 12-th grade students, the study gathered data about vocational objectives and factors that motivated students to enroll in agricultural mechanics, horticulture, and production agriculture programs. The study found the following: (1) more than 90 percent of the agricultural mechanics students intend to pursue a career in a field related to their studies, while only about 50 percent of horticulture students and production agriculture students intend to pursue a vocational objective related to their field; (2) motivator statements are not a good predictor of the enrollment area of students; (3) the average agricultural mechanics student was a male junior, age 17, who lived on 1-10 acres in a rural area, had blue-collar parents, held a job related to area of enrollment, was a member of the Future Farmers of America (FFA), and ranked in the middle one-third of the class; (4) the average horticulture student was a female senior, 17, lived in the city on less than one acre, had an unrelated job, had blue-collar parents, belonged to FFA, and ranked in the middle one-third of the class; (5) the average production agriculture student was a male senior, age 17, lived on a farm of more than 100 acres, had blue-collar parents, belonged to FFA and ranked in the middle one-third of the class; and (6) demographic characteristics are not good predictors of students' vocational objectives, nor of motivators for students to enroll in vocational agriculture. The study concluded that more care should be taken to encourage students with a real interest in vocational agriculture to enroll in such programs. It also showed that placement rates are unfair indicators of success of vocational agriculture programs because many students enroll in these programs who do not have a vocational objective in agriculture. (KC)

SUMMARY OF RESEARCH

DEPARTMENT OF AGRICULTURAL EDUCATION

The Ohio State University
Columbus, Ohio 43210

ED274821

SELECTED OHIO VOCATIONAL AGRICULTURAL STUDENTS: THEIR ATTRIBUTES, VOCATIONAL OBJECTIVES AND MOTIVATORS FOR ENROLLMENT

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U.S. DEPARTMENT OF EDUCATION
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INTRODUCTION

The importance of maintaining high quality vocational agriculture programs has been a major concern for those involved in agricultural education. One of the factors that undoubtedly affects the quality of the program is the type of students enrolled. Student enrollment in vocational agriculture was to be based upon the intent or desire of students to become employed in the agriculture industry.

McMillion (1976) suggested that students should not be recruited into vocational agriculture for more reimbursement nor should programs have students "dumped" into classes to meet minimum enrollment standards. The quality standards of the vocational agriculture program should not be ignored to increase enrollment. Bobbit (1975) also indicated that

"SELECTED OHIO VOCATIONAL AGRICULTURAL STUDENTS: THEIR ATTRIBUTES, VOCATIONAL OBJECTIVES AND MOTIVATORS FOR ENROLLMENT

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Morton (1978) investigated and determined that there was a positive relationship between achievement test scores and quality scores of SOEP and the opportunity to engage in SOEP. According to Lindsey (1978), teachers perceived themselves as the persons most involved in the choosing of a particular SOEP for limited opportunity students, deciding the students' initial projects, and evaluating the students' performance therein. Arrington (1981) found that there was a positive correlation between SOEP and the FFA. The FFA is also an integral part of a good vocational agriculture program. SOEPs have helped promote FFA programs. According to Vaughn and Wagley (1979), vocational agriculture teachers can stress SOEP and build a better FFA by following these steps: (1) begin by requiring every student to have a SOEP; (2) make SOEP an integral part of the instructional program, and (3) make sure that the SOEP instruction includes the development of occupational goals.

Based on supportive research, one may conclude that a SOEP is an essential as well as an effective learning tool. Therefore, if SOE programs are vital, then students enrolled in vocational agriculture should each have a SOEP, despite the limited opportunity of some. According to Dill (1983), a future study needed to be done to demonstrate how supervised occupational experience programs can further enhance the education of handicapped learners in vocational agriculture.

Purpose and Objective

The purpose of this study was to examine the type and scope of SOEP and the achievement of students mainstreamed in vocational agriculture in Ohio. Achievement was measured by the grade students received in vocational agriculture during the first semester of the 1983-84 school year. SOE programs consist of out-of-class project activities designed to supplement the instructional program of vocational agriculture. Student achievement has been found to be directly related to SOEP scope in previous research, therefore, it has been recommended for all students enrolled in vocational agriculture. The following hypotheses directed the research:

1. The achievement level of students is related to the type of SOE program.

   Types of SOE programs were:

   a. Crop and livestock projects (score 1)
   b. Improvement and skill development projects (score 2)
   c. In-school laboratory projects (score 3)
   d. Job placement or co-op (score 4)

2. The achievement level of students is directly related to the scope of the SOE program. Scope of the SOE program was measured by Productive Man Work Units (PMWUs). A PMWU is the amount of work one can accomplish in a 10-hour day. Average PMWUs were specified for each type and scope of SOE program

according to the procedure used in Ohio when evaluating for FFA awards. Separate scope scores were determined for each of the four types of SOE programs. Total scope was a sum of the four scores. Total out-of-school program scope was a sum of scores 1, 2 and 4.

An ex-post facto design was used in this study. Kerlinger (1973) identified three weaknesses of ex-post facto research (1) the inability to manipulate the independent variables; (2) the lack of power to randomize; and (3) the risk of improper interpretation. Kerlinger (1973) recommended that alternatives (rival) hypotheses be stated before data are collected to control these potential weaknesses.

Realizing there are many variables associated with supervised occupational experience programs, other extraneous (rival) independent variables were identified through a review of literature and examined in relationship to the hypotheses relating to SOEP type and scope. These variables were:

Student Characteristics

1. Type of school
2. Type of handicap
3. Length of enrollment in vocational agriculture

FFA Involvement Variables

1. FFA awards received
2. FFA offices held
3. The number of FFA field trips taken
4. The length of FFA membership
5. The degree of FFA participation

Student Opportunity Variables

1. The number of siblings students have enrolled in vocational agriculture
2. The students' place of residence
3. The responsible adults of the students
4. The parental assistance received for SOEP development
5. The opportunity to participate in a reduced price or free lunch program.
6. The occupational status of the students' parents.

PROCEDURE

Population and Sample

The population included students mainstreamed in vocational agriculture programs in Ohio. Vocational agriculture programs were in joint vocational schools, comprehensive high schools, and city vocational

schools. The population was identified from the Vocational Education (VE-21) reporting manual for fiscal year 1983. This manual reported 885 mainstreamed students enrolled in Ohio's vocational agriculture programs.

Cluster sampling was used. Teachers were randomly selected. all handicapped students taught by that teacher were included in the sample. Two stratified random samples were drawn from a target population of 885. One hundred and fifty students were randomly selected from comprehensive high schools and 150 were randomly selected from joint vocational schools and city vocational schools. The sample size totaled 300 students. These students were distributed among eighty-two vocational agriculture teachers in Ohio.

Instrumentation

The instrument for collecting data on students mainstreamed in vocational agriculture programs in Ohio was developed by the researcher. The instrument was referred to as a student information form. The instrument consisted of four major parts: Part I - Student Characteristics; Part II - FFA involvement; Part III - Type and Scope of SOEP; and Part IV - Student Opportunity to have a SOEP.

The instrument was field tested by graduate students enrolled in the Winter Quarter 1984 of the Agricultural Education Graduate Seminar (Problems and Issues in Agricultural Education). Three faculty members assisted in its revision and approval. This instrument was also pilot-tested on ten handicapped students enrolled in vocational agriculture in Licking County, Ohio at Johnstown High School, Northridge High School, and Licking County Joint Vocational School. These schools were not in the sample for the study which had already been drawn.

Data Collection

The instrument was mailed to eighty-two vocational agriculture teachers who taught the 300 mainstreamed vocational agriculture students. A cover letter was sent explaining to the vocational agriculture teachers the need and importance of the study. In two weeks, a follow-up letter was also mailed to the eighty-two vocational agriculture teachers. The instrument was mailed for the second time. A 68.3% response rate was obtained. After the deadline for submission of mailing had passed, a final attempt to secure respondents was made. Telephone interviews were done to secure data from five non-responding teachers who had 13 mainstreamed students. No differences were found between the respondents and non-respondents. The final response rate from the students was 72.7%. Data were collected from 218 of the 300 students in the sample and 60 of the 82 teachers.

Statistical Analysis

Data were analyzed with the use of the SAS and SPSS computer systems at The Ohio State University. Data were tabulated and cross-

tabulated to describe the sample. The Pearson Product Moment Correlational Coefficient was used to describe the relationship between the variables. Semi-partial correlational coefficients were obtained to indicate the unique portion of the variance explained by each variable and each variable set. Multiple regression statistics were used to predict variable scores. Qualitative data were summarized based on formulated research questions. The research questions were related to the variables in the study.

IMPLICATIONS

Frequencies and Summary Statistics for Selected Variables

Table 1 indicates the grades respondents earned in vocational agriculture for the autumn semester 1983-84. The mean was 2.17 (C) and the mode was 2.00 (C). Forty-two percent of the respondents earned a grade of C and 29% of the respondents earned a grade of B. Four percent of the respondents received a failing grade for the autumn semester in vocational agriculture. Also, 7% of the respondents received a grade of A.

Table 1

Grade Earned in Vocational Agriculture*

Grades	Frequencies N	Adj.%
A	14	6.6
B	62	29.4
C	89	42.2
D	37	17.5
F	9	4.3
Total	211	100.0

*Autumn semester 1983-84 Vocational Agriculture Grade

M	= 2.17	Missing Data	= 7 cases
Mdn	= 2.17	Min.	= 0.00
Mo.	= 2.00	S.D.	= 0.94

Table 2 reports the statistics of the respondents' crop and livestock projects. Sixty-eight percent of the respondents' PMWUs ranged between zero and .9. The mean PMWU score was 8.3. Also, 26% of the respondents' PMWUs on crop and livestock projects ranged between 1.0-19.9. Therefore, 94% of the respondents' PMWUs fell below 20. Only 6 percent of the respondents' PMWUs above 20 in PMWU score.

Table 2

Crop and Livestock Projects (Score 1)

*PMWUs	Frequencies N	Adj.%
0.0- .9	140	67.5
1.0- 19.9	55	26.4
20.0- 49.9	9	4.2
50.0- 99.9	1	.5
100 -461.5	3	1.4
Total	208	100.0

*A PMWU is the amount of work one person can do in a 10-hour work day.

M = 8.32	Missing Data = 10 cases
Mdn = .04	Min. = 0.00
Mo. = 0.0	Max. = 461.50
	S.D. =39.24

Table 3 indicates the frequencies and statistics of the respondents' Improvement Projects. The mean score was 4.6 with a mode of 0.0. Ninety-five percent of the respondents had a PMWU score less than 20 and only 5% of the respondents had a PMWU score above 20.

Table 3

Improvement Projects (Score 2)

PMWUs	Frequencies N	Adj.%
0.0- .9	106	51.0
1.0- 19.9	92	44.2
20.0- 49.9	6	2.9
50.0- 64.8	4	1.9
Total	208	100.0

M = 4.59	Missing Data = 10 cases
Mo = 0.0	Min = 0.0
Mdn = .85	Max =64.8
S.D. = 9.75	

Table 4 indicates the frequencies and statistics of the respondents' school laboratory and skill development projects.

Forty-eight percent of the respondents had PMWU scores less than 20. Thirty-four percent of the respondents had PMWU scores in the range of 50 to 99.9. Five percent of the respondents had PMWU scores of 100 and above. The mean score of the school laboratory and skill development project was 30.9. those students enrolled at joint vocational schools had the opportunity to earn 540 hours (54 PMWUs) in the school laboratory.

Table 4

School Laboratory and Skill Development Projects

PMWUs	Frequencies N	Adj.%
0.0- .9	66	31.7
1.0- 19.9	33	15.9
20.0- 49.9	28	13.5
50.0- 99.9	70	33.6
100-115.8	11	5.3
Total	208	100.0

M = 30.86	Missing Data = 10 cases
Mo = 0.0	Min = 0.0
Mdn = 27.00	Max =115.80
S.D. = 31.98	

Table 5 shows the frequencies and statistics of the respondents' placement, work experience, and small business projects. The mean score was 4.99. Eighty-four percent of the respondents had PMWU scores less than one and only 9% of the respondents' PMWU scores were 20 and above.

Table 5

Placement, Work Experience, and Small Business Projects

PMWUs	Frequencies N	Adj.%
0.0- .9	175	84.1
1.0- 19.9	14	6.7
20.0- 49.9	11	5.3
50.0- 99.9	7	3.4
100- 161.9	1	.5
Total	208	100.0

M = 4.99	Missing Data = 10 cases
Mo = 0.9	Min = 0.0
Mdn = 0.01	Max = 161.8
S.D. = 16.85	

Table 6 indicates the frequencies and statistics of the total PMWUs of the respondents. According to the data, 42% of the respondents had PMWU scores in the range of 50 to 99.9. Nine percent of the respondents had a PMWU score of 100 or more. Forty-nine percent of the respondents' PMWUs fell below a score of 50. The mean score was 48.8 with a mode of 54.0 and a median of 49.5.

Table 6

Scope of 1983 SOEP in Production Man Work Units

PMWUs	Frequencies N	Adj.%
0.0- .9	7	3.4
1.0- 19.9	53	25.5
20.0- 49.9	42	20.1
50.0- 99.9	88	42.3
100- 529.8	18	8.7
Total	208	100.0

M = 48.77	Missing Data = 10 cases
Mo = 54.00	Min = 0.0
Mdn = 49.50	Max = 528.60

Table 7 indicates the frequencies and summary statistics of respondents' out-of-school PMWUs. Fifty-one percent of the respondents' out-of-school PMWUs fell in the range of 1.0 to 19.9 whereas only 25% of the respondents had more than 19.9 out-of-school PMWUs. Seventy-six percent of the respondents' out-of-school PMWUs were less than 20.0. The mean of out-of-school PMWUs was 17.9.

Table 7

Out-of-School SOEP

PMWUs	Frequencies N	Adj.%
0.0- .9	53	25.4
1.0- 19.9	106	50.7
20.0- 49.9	31	14.8
50.0- 99.9	15	7.2
100- 463	4	1.9
Total	209	100.0

M = 17.91	Missing Data = 9 cases
Mo = 0.0	Min = 0.0
Mdn = 5.0	Max = 463.1
S.D. = 42.92	

Correlation Between the Level of Student Achievement and Independent Variables

The variables or factors in Figure 1 were significantly related to the level of student achievement. All of the student characteristics variables were unrelated to student achievement except the variable of being multiply handicapped. Therefore, the student characteristics variables were not included in Figure 1. The variables will be discussed in the following order: the SOEP variables, the student characteristics variables, the FFA involvement variables, and the student opportunity variables.

SOEP

A significant proportion of variance in student achievement was explained by the cumulative set of SOEP variables. Below are listed those SOEP variables that are both significantly related, and unrelated.

Significant related SOEP variables.

1. In-school laboratory projects (score 3) r = .19
2. Total PMWUs (score 1 + score 2 + score 3 + score 4) r = .15

Unrelated SOEP variables.

1. Crop and Livestock Projects (score 1) r = .02
2. Improvement and skill development projects (score 2) r = -.05
3. Job Placement and Co-op (score 4) r = .09
4. Out-of-school SOEP (score 1 + score 2 + score 4) r = .04

Student Characteristics

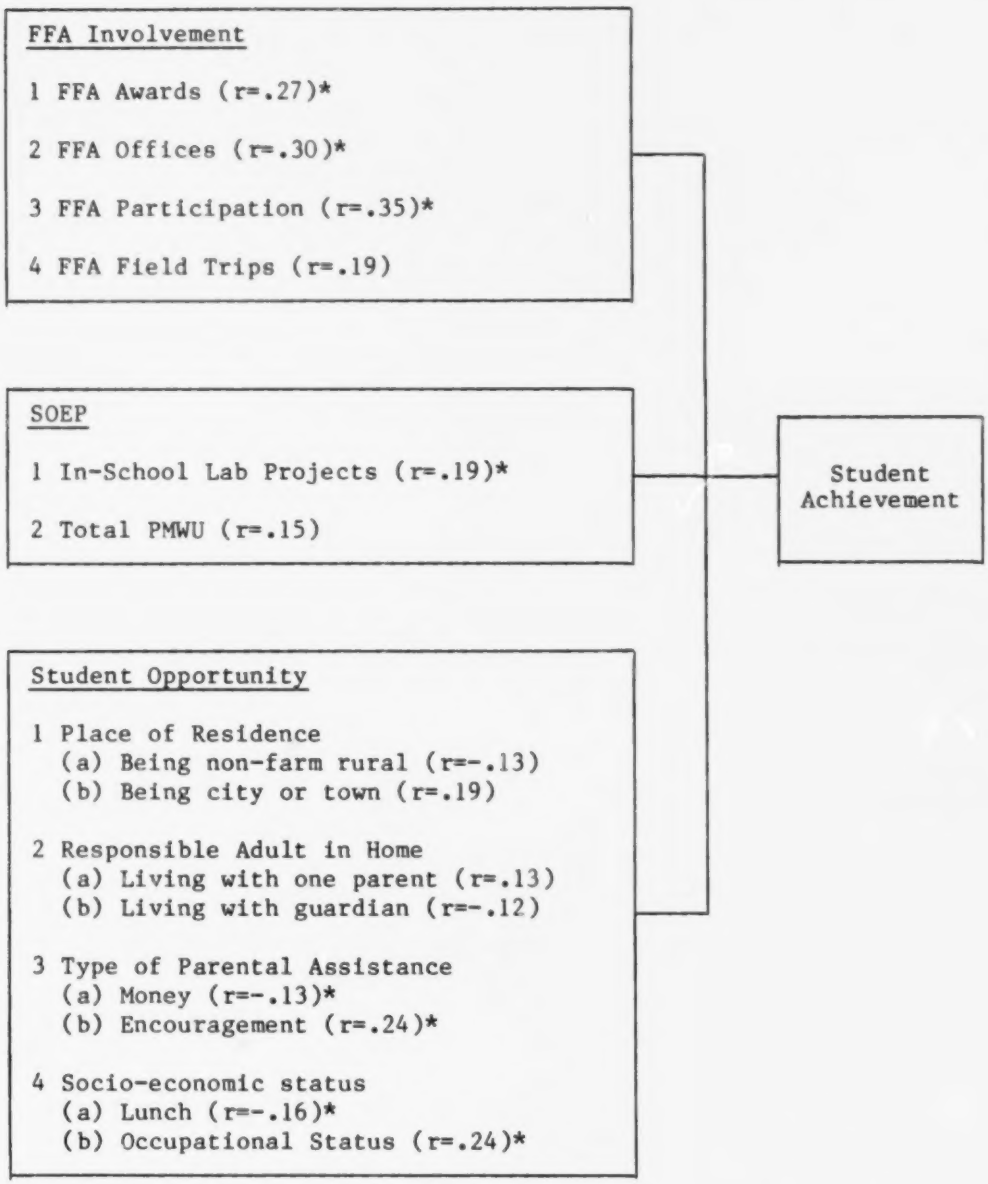
The student characteristics variables did not explain a significant proportion of variance in student achievement. However, there was a significant low positive relationship between student achievement and the tendency to be multiply handicapped. Type of handicap as a whole was unrelated that were unrelated to student achievement included type of School (r = -.06), and Length of Enrollment in Vocational Agriculture (r = .09).

FFA Involvement

A significant proportion of variance in student achievement was explained by the cumulative set of FFA involvement variables. The following FFA involvement variables were significantly related to student achievement:

1. FFA Awards (r = .27)
2. FFA Offices (r = .30)
3. FFA Participation (r = .35)
4. FFA Field Trips (r = .19)

Figure 1. Model of student achievement



*Significant semi-partial correlation with dependent variable P<.05.

There was only one FFA involvement variable that was unrelated to student achievement and this was length of FFA membership (r = .04).

Student Opportunities

The following student opportunity variables demonstrated significant relationships with the dependent variables:

1. Being non-farm rural resident (r = -.13)
2. Being city or town resident (r = .19)
3. Living with guardian (r = -.12)
4. Living with one parent (r = .13)
5. Money students received from parents (r = -.13)
6. Encouragement students received from parents (r = .24)
7. Students participating in a reduced price or free lunch program (r = -.16)

Student opportunity variables that were unrelated to student achievement included:

1. Students who had brothers or sisters enrolled in vocational agriculture (r = -.01)
2. The adult responsible for the students (r = .00)
3. Materials students received from their parents for SOEP development (r = -.03)
4. Other assistance students received from their parents for SOEP development other than money, material, and encouragement (r = .01)
5. Being from a full-time farm (r = .00)
6. Being from a part-time farm (r = -.07)
7. Living with both parents (r = -.05)
8. Living with other than parent or guardian (-.01)

Semi-Partial Multiple Regression

Table 8 indicates the semi-partial multiple regression coefficient for sets of independent variables found to be significantly correlated with student achievement. First, student opportunity (K_b = 8) as a set did account for a significant unique proportion of the variance in student achievement. The calculated semi-partial squared multiple regression correlation coefficient (sR^2 = .2137) proved significant based upon the calculated F-test: F = 7.03; $p<.05$; df = (8,135).

Second, the variables making up the set of FFA involvement (K_b=4) did account for a significant unique proportion of variance in the dependent variable (student achievement). The semi-partial squared multiple regression correlation coefficient was sR^2 = .0921 with a calculated F-test value of 6.05; $p<.05$; df=(4,135).

The set of SOEP scope (K_b=2) also accounted for a significant unique proportion of variance in the dependent variable (student achievement). The semi-partial multiple regression correlation coeffi-

Table 8

Semi-Partial Multiple Regression Coefficient for Sets of Independent Variables Found to be significantly Correlated with Student Achievement

Variable Set	Ka	Kb	sR^2	F
FFA Involvement	11	4	.0921	6.05[1]
Type of Handicap	14	1	.0039	1.03
Opportunity	7	8	.2137	7.03[2]
SOEP Scope	13	2	.0297	3.92[3]

Full Model R^2 = .4926 $p<.05$ (df=33,116)

[1] $p<.05$(df=4,135)
[2] $p<.05$(df=8,135)
[3] $p<.05$(df=2,135)

cient was .0297 with a calculated F-test value of 3.92; $p<.05$; (df= 2,135). Type of handicap, or the tendency to be multiply handicapped, while significantly related with student achievement (r=.18), failed to contribute a significant unique portion of the explanation of variance (sr^2 = .0039, $p<.05$).

Multiple Regression Analysis

Three FFA involvement variables, four opportunity variables, and one SOEP variable showed significant semi-partial relationships with grade and therefore were included in the regression analysis. There were only five selected in the stepwise multiple regression. The five variables and their multiple regression correlation coefficients can be found in Table 9. The best predictors of student achievement in order of significance were:

1. The student self-rating of his or her FFA extent of participation.
2. The number of FFA offices the student had held.
3. The number of FFA awards the student had received.
4. The occupational status of the student's parent.
5. The money the student received from parent(s) for SOEP development.

The total multiple regression coefficient, R^2 = .29, represented the proportion of variance explained in the dependent variable (student achievement) by the regression equation.

Table 9

Step-Wise Multiple Regression of Student Achievement on the Significant Independent Variables

Variables	B	R	R^2	R^2 Increment
FFA Participation	.168	.386	.149	.149
FFA Offices (X_2)	.312	.454	.206	.057
FFA Awards(X_3)	.158	.487	.237	.031
Occupation (X_4)	.161	.511	.261	.024
Money (X_5)	-.318	.536	.288	.017

*p<.05 F=13.086 (df=5,162)

DISCUSSION AND CONCLUSIONS

Conclusion 1: There is a relationship between the type of SOEP and student achievement in vocational agriculture. Students with more hours of in-school laboratory SOEPs had greater achievement than students with fewer hours. However, there was no relationship between the scope of out-of-school SOEPs and student achievement. While overall SOEP scope was related to achievement, the relationship appeared to be based upon the variance in the in-school laboratory scope score. The rival hypotheses explained more of the variance in student achievement than did the SOEP scores.

Conclusion 2: There is not a relationship between the level of student achievement and type of school.

Conclusion 3: There is not a relationship between the level of student achievement and type of handicap.

Conclusion 4: There is not a relationship between the level of student achievement and the length of a students' enrollment in vocational agriculture.

Conclusion 5: There is a positive relationship between the level of student achievement and FFA involvement.

Conclusion 6: There is a positive relationship between the level of student achievement and the following student opportunity variables: (1) student living in a town or city, (2) encouragement, (3) student living with one parent, and (4) occupational status of parent(s).

Conclusion 7: There is a negative relationship between the level of student achievement and the following student opportunity variables: (1) students living with a guardian, (2) money provided by parent(s), (3) participation in a free or reduced-price lunch program, and (4) students living on a non-farm rural residence.

Conclusion 8: There is not a relationship between the level of student achievement and the following responsible adult variables: students living with both parents, students living with a relative, students living with a responsible adult other than parent, guardian, or a relative.

Conclusion 9: There is not a relationship between the level of student achievement and the number of sibling students who had enrolled in vocational agriculture.

Discussion

Based upon the findings of this study, there are several significant factors contributing to the achievement of students mainstreamed in vocational agriculture programs in the state of Ohio.

First, those students who received more FFA awards, held more FFA offices, and maintained an active level of participation would likely have a higher achievement level than those who did not. This can best be explained by saying that FFA awards, FFA offices, and FFA participation usually provide motivation for students enrolled in vocational agriculture. Motivation and achievement compliment each other, therefore, this contributes to better grades.

Second, those students who have in-school laboratory projects can expect to have a higher student achievement level than those who do not. This may be explained by realizing that handicapped students often require close supervision as well as individualized teacher assistance, therefore, in-school laboratory projects are more conducive to meeting both needs. Many states define SOEP as out-of-school activities. Ohio has allowed in-school laboratory projects as SOEPs for students for a number of years. It appears that the program standards adopted by Ohio have been beneficial for handicapped students.

Third, those students who receive parental encouragement in developing their SOEP have a higher level of achievement than those who don't. This may be explained by stating that parental approval, supervision, and concern may cause students to realize the importance of high student achievement. A child's value system is usually developed from those things their parents see as being significant. Therefore, those students whose parents provide encouragement may strive to obtain higher achievement.

Fourth, those students who have parents with a high occupational status achieve at a higher level whereas those students who participate

in a reduced or free lunch program have a lower level of achievement. These two variables describe the relationship between socioeconomic status and student achievement. This can best be explained by stating that parents with higher occupational status place greater expectations on their children to reach a high level of student achievement. Therefore, students who want to satisfy their parents do what is expected. Finally, parents with higher occupational status can provide their children with more out-of-school learning experiences that can contribute to higher student achievement.

Fifth, those students who receive money from their parents for SOEP development have a low level of student achievement. This may best be explained by saying that a child may fail to appreciate good money management skills when money is given rather than being earned. This may also cause a child not to relate higher student achievement with career success. Money provides several alternatives to studying, especially socialization. The more money a student has, the more activities that students may find to engage in rather than study.

Sixth, those students who come from a one parent family achieve at a higher level. This perhaps can be explained by saying that when there is only one parent present in a home, this one parent may feel a need to overcompensate for the missing parent. Also, when there is only one parent, often times students experience financial difficulties that may cause them to develop a desire to achieve in order to become skillful for job entry.

Based upon the findings of this study, the following recommendations for further study have been generated:

1. Further studies need to be conducted to determine if there is any inservice training that would help vocational agriculture teachers become more proficient in SOEP development for mainstreamed students.

2. A longitudinal study needs to be conducted to determine the impact supervised occupational experience programs have on the career choices of mainstreamed students.

3. A study needs to be conducted that would explore ways of improving out-of-school SOEP for students mainstreamed in vocational agriculture.

4. A study needs to be conducted in an attempt to identify some factors that will influence greater FFA involvement, higher PMWU scores, and better opportunities for SOEP development for students mainstreamed in vocational agriculture.